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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Castor for Trolleys, Furniture and Various Carriages

I, GEORGES EMILE LOUIS VAN CAMPO, a citizen of the French Republic, of 136, Rue du Faubourg Poissonnière, PARIS (Seine), France, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to an improved castor for trolleys, pieces of furniture and various carriages.

Said castor comprises an annular peripheral rolling element defined inwardly by a frusto-conical face in which is formed a continuous circular groove, an inner element in one piece constituted by an annular portion defined externally by a frusto-conical face, having the same conicity as the frusto-conical face of the peripheral element and also provided with a continuous circular groove and an arm which is laterally offset relative to the annular portion on the divergent side of the frusto-conical face so as to connect the castor to the furniture or carriage to be supported, the frusto-conical face of the inner element being disposed in facing relation to the frusto-conical face of the peripheral element so that the grooves formed in said faces are disposed in facing relation to each other and form an annular space between said elements, and rolling members disposed in said annular space so as to permit the rotation of the peripheral element about itself and about the inner element.

Owing to this arrangement, a very strong castor is obtained having a smallest possible number of component parts, which renders it cheap to manufacture, simple in construction and imparts thereto a pleasant appearance.

Further features and advantages of the invention will be apparent from the ensuing description, with reference to the accompanying drawing to which the invention is in no way limited.

In the drawing:

[Price 4s. 6d.]

Figure 1 is a side elevational view, with parts cut away, of one embodiment of the castor according to the invention,

Figure 2 is a sectional view taken along line 2—2 of Figure 1;

Figure 3 is a rear elevational view of the castor showing the connecting arm, and

Figure 4 is a partial longitudinal sectional view of the arm shown in Figure 3.

With reference to the drawing, in which the same elements carry in the several Figures the same reference characters, the illustrated embodiment of the castor according to the invention comprises an annular peripheral element 1 having an outer face 2 constituting a rolling surface and a frusto-conical face 3 which is inwardly directed and has in its middle part a continuous circular groove 4 (Figure 2). This annular peripheral element 1 constitutes the part of the castor which is adapted to roll along the ground or other support surface when this castor is mounted on a piece of furniture or carriage. The castor further comprises an inner element in one piece which is generally designated by the reference character 5 and comprises an annular portion 6 defined externally by a frusto-conical face 7 having in its middle part a continuous circular groove 8. The frusto-conical faces 3 and 7 of the elements 1 and 5 have the same conicity. The element 5 comprises an arm 9 which extends, in the presently-described embodiment, in a rectilinear manner in the direction parallel with the general plane of the castor and terminates approximately at the level of, or slightly beyond, the rolling surface 2 of the peripheral element 1, from which it is slightly offset or separated so as to avoid rubbing against this element when the castor is in service (see Figure 3). The arm 9, which serves to connect the castor to the piece of furniture or carriage to be supported, is provided at its free end with a blind hole 10 whose wall comprises, adjacent the upper end

of the arm 9, an inner circular projection 11. This hole 10 is provided to receive a mounting pin which is secured by screwing or other means to the leg or the like of the piece of furniture or carriage and permits the castor to pivot in all directions about said pin. Such a pin is shown in Figures 1, 3 and 4. As can be seen more clearly in Figure 4, it comprises an elongated narrow portion 12 whose pointed bottom end 13 bears against the bottom of the hole 10. A circular groove 14 formed in the portion 12 receives, when the pin is mounted in the arm 9, the projection 11 so that the latter prevents the pin slipping out of the hole 10 when the table or carriage is raised. The pin also comprises an enlarged head 15 which is adapted to be secured to the left of the trolley, the piece of furniture or carriage by any means, such as a screw (not shown). To permit placing the narrow part 12 in the hole despite the presence of the projection 11, the wall of the upper part of the arm 9 comprises one or more longitudinal slits, such as the slits 16 shown in Figures 1 and 3.

With reference to Figure 2, it can be seen that the peripheral and inner elements 1 and 5 are so fitted together that the respective frusto-conical faces 3 and 7 are in facing relation to one another and thus form an annular space 17 (Figure 1) in which are trapped rolling members, such as steel balls 18. The number of these balls of course depends on the size of the castor. It can be seen in Figure 2 that the faces 3 and 7 have an identical conicity the included angle of which is α .

The elements 1 and 5 are so constructed that after the assembly thereof a slight clearance α exists preferably between the faces throughout their extent so as to avoid rubbing therebetween when the element 1 rotates about its axis relative to the annular portion 6 of the element 5. The value of the angle α is not critical and should be selected in such manner as to permit an easy assembly of the elements and rolling members without allowing the latter to escape in castor service. An angle α of the order of 60° has been found very satisfactory.

In the illustrated embodiment, the annular space 17 has a circular cross-sectional shape, but it is possible to make the grooves 4 and 8 of different shape so that this annular space has, for example, an oval cross-sectional shape without departing from the scope of the invention.

The elements 1 and 5 of the castor can be composed of any suitable material selected in accordance with the forces this material is called upon to withstand. Materials of utility in the construction of these elements are for example: metal such as steel, wood, and synthetic plastic materials. Among the latter may be mentioned a superpolyamide such as that

known under the trade name "RILSAN" is particularly advantageous since it is sufficiently resistant to wear produced by the rubbing of the steel balls in the grooves 4 and 8 in castor service. The elements 1 and 5 are preferably moulded elements but they could be obtained by any other method if desired. It will be noted that the construction adopted permits obtaining, owing to the ball system, a better distribution of the forces than if the piece of furniture rested on a spindle of the castor as in the conventional spindle type castors. Owing to this absence of a hub, the centre of the castor is hollow, which imparts thereto a light appearance. The castor according to the invention rolls along very easily and is capable of supporting loads as much as 60—70 kilograms or more.

The assembly of the castor is extremely simple. It is achieved by a simple pressure in the following manner: the peripheral element 1 is placed in a flat position with its face 3 upwardly directed. The balls 18 are placed in the groove 4 and the face 8 of the inner element 5 is applied against the balls. It is then sufficient to strongly press against the element 5 to force—owing to the flexibility of the material and the slight bending afforded by the annular shape of this element—the element 5 into the element 1 until the balls 18 are engaged in the groove 8 of the frusto-conical face 7 and become trapped in the annular space 17. Once the elements 1 and 5 are assembled it has been found to be very difficult to separate them, thus avoiding this occurring in castor service.

If desired, the central aperture in the castor could be closed by means of a thin cover which could be applied and secured to the wall of the peripheral element 1 or made in one piece with the element 1 by moulding or other means.

Although a specific embodiment of the invention has been described, many modifications and changes may be made therein, without departing from the scope of the invention as defined in the appended claims.

Thus, the peripheral element 1 could have an outer face constituting a rim on which is mounted a detachable rolling element of rubber or other material forming the rolling surface of the castor.

WHAT I CLAIM IS:—

1. A castor for trolleys, pieces of furniture and various carriages comprising an annular peripheral rolling element defined inwardly by a frusto-conical face in which is formed a continuous circular groove, an inner element in one piece constituted by an annular portion defined externally by a frusto-conical face, having the same conicity as the frusto-conical face of the peripheral element and also provided with a continuous circular groove and an arm which is laterally offset relative to the annular portion on the divergent side of the frusto-

- conical face so as to connect the castor to the furniture of carriage to be supported, the frusto-conical face of the inner element being disposed in facing relation to the frusto-conical face of the peripheral element so that the grooves formed in said faces are disposed in facing relation to each other and form an annular space between said elements, and rolling member disposed in said annular space so as to permit rotation of the peripheral element about itself and about the inner element.
2. A castor as claimed in Claim 1, wherein the peripheral and inner elements are obtained by a moulding operation.
3. A castor as claimed in Claim 1, wherein the conicity of said frusto-conical faces is about 60°.
4. A castor as claimed in Claim 1, wherein the rolling members are balls.
5. A castor as claimed in Claim 1, wherein the annular space has a roughly circular cross-sectional shape.
6. A castor as claimed in Claim 1, wherein the annular space has an oval cross-sectional shape.
7. A castor as claimed in Claim 1, wherein said arm has a straight part extending in a direction parallel with said castor.
8. A castor as claimed in any one of the preceding claims, wherein the free end of the arm comprises a longitudinal blind hole for receiving a pivot pin rigid with the piece of furniture or carriage on which the castor is to be mounted for pivotal movement about said pin.
9. A castor as claimed in Claim 8, wherein the wall of the blind hole has an inner projection which engages in a recess in said pin.
10. A castor as claimed in Claim 8, wherein the wall of the free end of the arm comprises at least one longitudinal slit to permit the engagement of the pin in the blind hole.
11. A castor as claimed in Claim 1 or 2, wherein the peripheral and inner elements are composed of superpolyamide.
12. A castor for trolleys, pieces of furniture and various carriages, substantially as described and shown in the accompanying drawing.

MARKS & CLERK,
Chartered Patent Agents,
Agents for the Applicant(s).

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1 SHEET

This drawing is a reproduction of the Original on a reduced scale

Fig.1

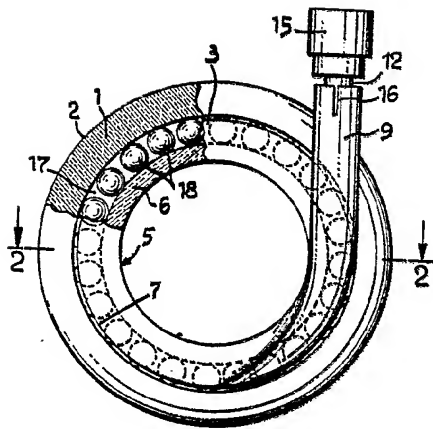


Fig. 3

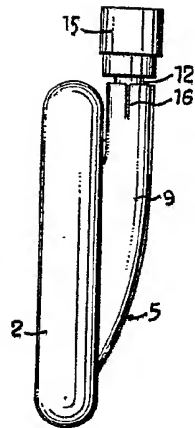


Fig. 4

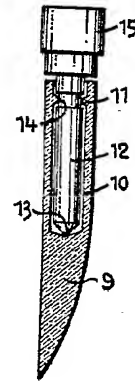


Fig.2

